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FACULTY BODY MECHANICS—A FACTOR FOR CAUSING DIAGNOSTIC ERRORS*

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Philadelphia, Pa.

All of you at one time or another may have wondered why the appendix you had just seen removed did not look worse than it did. Considering the patient had fever, an increase in leukocytes, had been vomiting, had pain in the abdomen and tenderness over McBurney's point, you had expected to see the surgeon remove an acutely inflamed appendix instead of a rather normal looking organ. The appendix may or may not have contained a freely movable fecalith, it may have been a little short, a little long, a little kinked, it may have been covered with a membrane, but its color was in no way different from the cecum and terminal ileum.

Further search for possible pelvic trouble on that side, examination of the terminal ileum for a diverticulum, or an exploration upward of the gall bladder may have been made; and the urine report was again examined to see if pyelitis had been overlooked. Nothing more being found, the wound was closed and the patient made an uneventful recovery. The pathologic report came back and showed chronic appendicitis, and without thinking, we justified the stand we took in having the appendix out. However, the operation was for acute appendicitis and we know that any appendix will show chronic changes. No harm had apparently been done and the patient convalesced satisfactorily and in due course of time returned with pain in the same location.

The medical man is prone to say that this pain is due to adhesions, although we all know that adhesions which do not cause complete or partial obstruction to a hollow viscus do not cause symptoms and are therefore harmless. Another possibility considered is that one of the superficial nerves was caught in the scar, or, if the patient is female, that the right adnexae may be the cause of the trouble. If the pain is persistent enough, a second operation may be performed with the above possibilities in view, or that a foreign body has been left behind. Nothing more definite was found than at the first operation, but under rest in bed and post-operative regime, the patient is more comfortable.

This patient may end his surgical career right here, may be lost sight of to another doctor, or go on as I have seen them until there are twenty-six abdominal scars. In fact, this type of history has become so common in my experience that I am suspicious of every case with multiple abdominal scars.

The true explanation back of these cases was the subject of an intensive search for many years by my late chief, Dr. John B. Carnett. Under the title of Intercosatal Neuralgia of the Abdominal Wall (1) he published his first thoughts in this matter in 1926. Since then, there have been numerous publications by himself (2,3) and by the two of us (4,5), showing the extent to which pain in the surface covering of the body may be mistaken as arising from the underlying viscus. As a matter of fact, it is my belief that fully eighty per cent of all abdominal pains is pain within the abdominal wall rather than within the abdominal cavity itself. Just as syphilis has been accused of imitating practically every other disease, just so parietal tenderness may confuse any number of clinical pictures.

Having satisfied ourselves that this tenderness was the explanation of so many errors, a way was sought to differentiate between parietal and visceral tenderness. This Dr.

* Read before the Medical Society of Delaware, Dover, October 10, 1934.

Carnett described very well in his original paper and he called it the A. B. test. It consisted of examining the abdominal wall relaxed (A) as in any routine examination and picking up the point of maximum tenderness. When found, this tenderness may be either in the parietes or in the viscera. The patient is then requested to tighten the abdominal wall. (B). This can be done by ballooning out the abdomen, attempting to raise both heels off the bed with the knees stiff, or sit up without using the hands. The examination is then repeated, and if there is no tenderness at the point of the previous maximum tenderness we decide that the tenderness originally found was visceral. If, however, tenderness still persists we know that some of it is in the parietes because our fingers are kept away from the viscera by intervening tensed muscles, but we do not know how much tenderness may also be in the viscera. The area is then anesthetized, either by local infiltration or conduction anesthesia and the examination repeated with the abdominal muscles relaxed. If the anethesia is successful, pinching of the skin and fat will not be painful. If pressure with the fingers gives tenderness now it shows that tenderness is in the viscera, and if there is no tenderness then all of it which we found originally was in the parietes.

Fearful that this might be misleading in some acute cases, I infiltrated the parietes in numerous cases of acute appendicitis. After getting the anesthesia in the anterior abdominal wall, I repeated the examination and found that the tenderness was more acute rather than less, due to the removal of the natural protectiveness of the overlying muscles.

For confirmation of the presence of acute inflammatory disease within the abdomen, I know of no test superior to this one of Dr. Carnett's.

Another lesion where the differential tests are of interest is in perforation of the upper intestinal tract. In sixteen cases of perforated gastric and duodenal ulcers I have taken the time to pick up the exquisite tenderness that pressure causes over the board-like rigidity of the upper right rectus muscles. I have then asked the patient to add to that rigidity by voluntarily straining as previously described. At first, I was surprised, and since then I have learned to expect that as long as the straining is continued, I can put a great deal of pressure on the upper right rectus muscles without causing tenderness, definitely showing the visceral positiveness of the test. Having learned of a way to differentiate between the visceral and parietal tenderness our next thought was to find the cause of this parietal tenderness.

Upper respiratory infections were the commonest cause, with the parietal symptoms coming on at intervals varying with the intensity of the infection. The ordinary head cold is prone to cause the parietal symptoms on the 12th, 13th, or 14th day, but follicular tonsilitis may show evidence of parietal tenderness as early as the second day. Secondly, postural defects, such as kyphosis, scoliosis, and particularly lordosis were found as causes. Postural defects require the addition of either trauma or acute infection to start off the clinical picture of pain and tenderness. Thirdly, osteo-arthritis of the spine. This, of course, is more apt to be found in our patients beyond the age of forty. Less frequently, vertebral injuries and metastic disease of the vertebrae are found as the causative factors.

The acute infections as cause do not concern us much because they are more or less self-limited, and between attacks, the patient may be quite normal. The postural defects, however, are far more interesting, most of them can be corrected, and the relief afforded by some minor corrections is almost miraculous.

In order to get some idea of the importance of posture or body mechanics to disease I paid several visits to the clinic of Dr. Joel E. Goldthwait of Boston. This was the result of reading Cochrane's Orthopedic Surgery (6) and Dr. Leah Thomas' Body Mechanics and Health (7). Both of these authors founded their work on the clinical experience of Dr. Goldthwait. Here I found that poor posture was supposed to produce its various deviations from normal because the diaphragm was neglected. In short, gravity starts the downward pull of all the body structures and in the descent the diaphragm suffers markedly. As the diaphragm is the venous pump, interference with its function leads to peripheral congestion, and congestion to bacterial invasion; therefore, their first efforts are directed

toward freeing up the numerous articulations of the thorax and elevation of the diaphragm. This is followed by rotation of the pelvis, with the idea of decreasing the lumbar lordosis.

In our work of trying to reconcile these theories to our findings, I was impressed with the proportion of backs showing scoliosis. Correction of the dorsal kyphosis and lumbar lordosis was much more difficult in the presence of scoliosis. By far, the commonest cause of scoliosis is the fact that lower extremities are of unequal lengths. Taking a group of apparently normal individuals, four out of seven will show one leg shorter than the other. In those coming to us as patients complaining of parietal pain, the percentage is very much higher. Curiously, sixty-five per cent of the cases are shorter on the right than on the left.

Our work of correction now starts by equalizing the length of the legs by raising the heel on the short side. Many cases with this simple procedure get relief and do not return for further correction. Having corrected the scoliosis, Goldthwait's exercises are then started to correct the lordosis.

Among the conditions which have been benefited by first straightening the back, have been parietal pain which was formally thought to be due to gall bladder disease, duodenal ulcer, or stasis, appendicitis, diverticulitis, and many of the pelvic disturbances.

In our early studies, we were concerned primarily, with the abdomen, but more recently our comparisons have taken in the whole body, and we found that neuralgia of any of the spinal nerves may lead to a false diagnosis of trouble with the underlying structure. As an example of this many headaches from which one suffers are scalp aches rather than brain aches; painful shoulder in the absence of sub-deltoid deposit is frequently neuralgia. The so-called tennis elbow must be diagnosed with care, because the patient complains of pain on one side only, but similar tenderness may be found on the opposite side. Tenderness of the mastoid region may frequently be neuralgia without any underlying mastoid disease. Some of the precordial and angina-like pains are often found to be neuralgia. Tenderness of the breasts is more apt to be due to neuralgia than to any lesion which may be present in the breast, with the exception of an abscess. In other words, a patient frequently seeks advice for a painful or tender mass in the breast; careful examination will reveal that the tenderness is not inherent to the mass. Further clinical proof exists in that removal of the mass for biopsy still leaves the same pain and tenderness as existed prior to operation.

It may be rather startling to hear me say that Dr. Carnett felt that every case of gall stones with reference of pain to the shoulder also had intercostal neuralgia, and that the numerous cases found with gall stones without reference of pain to the shoulder are free of neuralgia. He also believed that belching of air, one of the ancient symptoms attributed to gall bladder disease, occurs only with the patients who also have intercostal neuralgia. I am convinced that these statements can be readily proven by careful clinical observation.

We may go down the lower extremities with similar findings. Involvement of the ilio-inguinal nerve may give rise to symptoms often diagnosed as sprain of the adductor muscles, or cause pain and tenderness often diagnosed as incipient hernia. Tenderness over the inner portion of the knee suggesting injury to the internal semilunar cartilage is frequently purely neuralgia with no trouble with the cartilage. Tenderness over the shin may bring up the possibility of periostitis or even osteomyelitis, yet when the skin and fat are grasped between the thumb and index fingers, the tenderness can be duplicated without touching the bone.

If there is any purpose to be served by this presentation of possible errors, it is to stress the consideration of posture, the shape of the spine, and the length of the legs in making the original examination. These possible errors are based on actual experiences and the correction of them with resulting relief of pain has afforded a great deal of satisfaction.

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DISCUSSION

DR. O. S. ALLEN (Wilmington): This is a very interesting subject to me. I would like to ask Dr. Bates what percentage, if any, of these cases have the so-called rheumatic background. Of course we don't know what rheumatism is, but I mean with the so-called rheumatic background.

Another thing: have you had any experience with girls—it happens mostly with females, though it does occur in the males—around puberty that have the so-called rheumatic background.

DR. BATES: Pardon me, Doctor, I cannot understand you!

DR. ALLEN: Have you run across any of the female species between, we will say, ten and eighteen, it rarely occurs above that, around puberty, that have the so-called rheumatic background with mitral valvulitis that develop pain mostly on the right side, occasionally on the left, which seems to disappear mostly around 17, 18, and occasionally around 20? I really don't know what produces the pain, but so many of these females give a history of having had pain, and of course it is an old story, it is nothing new. They will tell you that they develop this pain, and they develop it while they are walking, and when they stop and rest the pain disappears.

I have always thought, whether I am right or wrong, that it is more or less hitched up with the circulation, and I thought probably that you had some experience along that line, or you might give use the answer to it.

DR. D. R. DAVIDSON (Claymont): I wish to thank Dr. Bates for his presentation of these causes of error. Ever since Dr. Carnett's visit to Wilmington I have been particularly anxious and on the lookout to find absolute intercostal neuralgia. Possibly I have overlooked it.

It has been my feeling that the patients who come in after cold, or grippe, or tonsilitis, with neuralgia are more apt to have it about the neck, or arm, or the actual chest surfaces rather than on the abdominal surfaces. I have seen probably eight or ten involving the abdomen, but about three or four times that many involving the higher nerves intercostally. I am wondering whether the incidence of your neuralgia is greater in the abdominal wall, and that I may have overlooked some cases, or whether the incidence is really greater in these other parts.

DR. H. L. HEITEFUSS (Wilmington): This paper of Dr. Bates has been very interesting to me because of a personal experience that happened just a couple of months ago.

I was traveling on a brief vacation, when I was suddenly struck with right upper pain. This happened a short time after having some liverwurst and beer. I thought sure that was the cause of it, and I feel personally that I had an acute cholecystitis. It was very painful, and I was in an automobile at the time, over a very rocky road. Fortunately I was not driving. I had to hold my arm (illustrating) this way to get any kind of relief. The pain continued, and when I arrived at my destination I went to see a doctor, and told him the story. He felt quite sure that I had an acute cholecystitis, and the more I thought about it the more certain I was that I had. It is a little hard when you know something about it to be sure of smptoms, but I was quite certain I did have some pain in the right shoulder blade. This was a little vacation trip.

I was given calomel and taken off all food, just put on fruit juices and things like that, so I didn't enjoy myself very much for a few days. The pain became less, but still persisted, and just made things miserable for me for four or five days.

I came home at the end of about seven or eight days, and the pain returned again. right upper quadrant, and I could find a point that was very sore. I then immediately went to a friend of mine in Wilmington and told him the story, and he did a fractional analysis and a gall bladder drainage, both of which were perfectly normal. Then, as Dr. Bates mentioned, going over the abdomen, putting tension in it, the pain was exquisite. I couldn't stand it, and it cleared up very simply with some symptomatic treatment—salicylates—and has never returned.

A little while before all this happened I had had an acute right maxillary sinusitis; but the whole story certainly brings out the fact that Dr. Bates has said, of being accused and accusing myself of an actue cholecystitis

whereas the entire thing was intercostal neuritis.

DR. BATES: I will hurry this through because I know you are anxious to get to the election.

In answer to Dr. Allen's question regarding statistics, I am not able to give you any figures, but it is a very common picture with us to see the adolescent with their cardiac symptoms with intercostal neuralgia, but we connect the causative factor, the infection, whenever we can find it, sinus, or tonsils, and so on, to the heart, as giving rise to the intercostal neuralgia.

Now as to the choice of location, whether it is on the right or left, you will find that most of those pains without treatment of the infection begin to disappear as soon as your patient is kept strictly in bed. That is true, isn't it?

DR. ALLEN: Yes.

DR. BATES: Then the location of your pain, where it comes to the surface, is due to their postural defect.

Sixty-five per cent have a short leg, and the rest of them are over here (indicating). The hookup is not between the parietes and the heart, but the cause of the heart plus the parietes, and the location depends upon the postural defect.

Dr. Davidson's findings of neuralgia: we have to have a little bit of time with a man actually in the clinic to pick up any place near as many intercostal cases as we pick up. As it may be said, it is perfectly true that when somebody rides a hobby, he may see them where the other fellow misses them; but I am interested in his assertion that he finds more in the chest than he does in the abdomen. There is one type of person where he will find more intercostal neuralgia in the chest than in the abdomen, and that is the person working where there are looms, and he will stand this way (indicating) weaving the threads of the loom, so that muscles of the neck and chest are on stretch, and then when he has his acute infection the muscle which has been spastic from overuse governs the distribution of his pain, and he will get upper chest pains; whereas the ordinary patient, with his dropped abdomen and slouched figure is more apt to give us the abdominal picture than the chest picture.

Dr. Heitefuss' picture is a typical one. In addition to his description of having an infection before he started the ride, he also has a little drop of the right shoulder, and I think a scoliosis. (Laughter). I would like to predict that he was riding on the right hand side of the car.

DR. HEITEFUSS: Right.

DR. BATES: If you see a patient who is a road hog, and who continually wants to drive on the left side of the road, he has right-sided intercostal pain, and he rides over this way (indicating) to stretch his spine. Every time you get a chance to stop a road hog, poke him, and he has pain on his gall bladder, and he ought to drive a right hand car. If Dr. Heitefuss had changed his position in the middle of his trip, it would not have been so painful.

THE USE OF SERUM, OXYGEN AND ARTIFICIAL PNEUMOTHORAX IN THE TREATMENT OF PNEUMONIA*

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Pneumonia, cancer, heart disease and kidney disease continue to be the most frequent causes of death. Preventive and curative medicine have not made any notable reductions in the mortality from them. In contrast, smallpox has been almost eliminated by vaccination; tuberculosis destroys only about one-third the number it did thirty years ago, because of general measures of hygiene and sanitation; the incidence of typhoid fever has been greatly reduced by the same means and, latterly, by immunization; diphtheria mortality has been reduced from about 40% to less than 10% by means of an antitoxin and now it is about to be eliminated by immunization: scarlet fever and measles will probably succumb soon to the continuous attacks upon them.

But pneumonia goes on year after year, killing the old and debilitated, attacking the flower of our youth, and exacting a toll of 25 to 30 per cent despite all efforts to cure. It still remains one of the chief captains of death.

SERUM

The introduction of diphtheria antitoxin and the proof of its value in curing that dis-

* Read before the Medical Society of Delaware, Dover, October 9, 1934.

ease led to many efforts to make an antitoxin for pneumonia. Disappointment followed disappointment until Rufus Cole, working at the Rockefeller Institute, produced his antiserum. Statistics compiled by Cole showed a marked lowering in the death rate of type one cases, and a moderate reduction in type two. Other users did not have such marked success. The large amount of serum needed, and the severe reactions which followed its use led to efforts to improve the serum. The antibody solution of Huntoon promised much, but it was soon found to be less potent than the whole serum of Cole, and to cause such marked febrile reactions that it was abandoned. Then we had offered to us the antiserum prepared by the method of Felton. This is highly concentrated and refined, with a low content of serum protein. It has been used since 1924 in a great number of cases, by many clinicians. The statistics which they have gathered command belief in its efficacy. A noted physician has said that when the serum is used at the onset of the disease its success is comparable with that of diphtheria antitoxin. While it can be used with advantage on the second and third day, its most notable value is seen when it is given within the first twenty-four hours of the disease. It is then, in this particular, like other curative serums.

The statistics of Cecil and Plummer (Cecil's Text Book of Medicine, 3rd Ed. W. B. Saunders Company, p. 1933) are representative of the results got by its use. In 1930 they reported on the use of Felton's concentrated serum in 473 cases. The mortality in these was 20.1%, while that of an equal number who did not receive the serum, was 31.2%. If only those who received the serum in the first few days of the disease were counted, there were only 11.7% of deaths. The mortality in type two cases was little reduced, but they felt it was the most promising agent available.

Method of Administration

Type the sputum at once: this can be done in four hours by the method of Sabin. If the invading organism be other than type one or two pneumococci, the serum will not be of use. Elicit from the patient the history of previous injections of horse serum, asthma, or other condition, which may induce serum sensitivity. Do a conjunctival or intracutaneous test with 1-10 dilution of serum, a vial of which is provided with the package of serum. I prefer the intracutaneous method for it is less sensitive: one who gives no reaction with this in 15-20 minutes is perfectly safe to receive serum, if it be given very slowly. If the patient be allergic he must be desensitized by giving first subcutaneously and then intravenously, ascending doses of serum, beginning with a very small dose, 0.025 c. c. In the non-sensitive case give intravenously 1 c. c. of the antiserum, taking five minutes for its injection, and 4 c. c. more in the next five minutes. Then give 15-20 c. c. every two or three hours until 100 c. c. have been given. On the second day give one-half this quantity if conditions have improved, or an equal amount if they have not. The same is done on the third day. There is no use continuing beyond the third day.

Allergic reactions will appear within a few minutes after the first injection, if at all, with symptoms of shock, dyspnea, flushing of the face, great anxiety, and sweating. The injection must then be stopped and 0.5 c. c. epinephrin solution 1-1000 given hypodermically. Repeat this dose every half-hour for 2 or 3 times if the symptoms continue. They do not recur with subsequent injections.

Thermal reactions may occur in one-half to one hour. These are manifested by chill and high fever, which lasts several hours and then drops suddenly. These seldom occur when a reliable serum is used.

Serum sickness appears in 7-11 days in about 25% of cases. It is manifested by urticaria, temperature of 101°-10° F and painful joints. Its severity depends on the amount of serum used and usually subsides in several days.

OXYGEN

The use of oxygen in the modern way has contributed so much to the comfort of pneumonia that there is a distinct impression that it saves life. The nature of the improvement is such that this belief is incapable of statistical proof. Normal blood is about 95% saturated with oxygen. In bad pneumonia this may fall to 75%. This decrease is most notably shown by cyanosis, which is in proportion to the anoxemia. Respiration becomes rapid, shallow, labored; the pulse rate increases and

diastolic pressure falls; nausea, vomiting, vertigo, weakness, delirium, coma, heart failure and death may ensue.

Inhalation of air with a concentration of 40 to 60% oxygen will usually raise blood concentration to normal in 2-3 hours; cyanosis is then relieved and other symptoms lessened. The distressing condition of anoxemia adds to the burden the patient is carrying and reduces his chances of recovery. The relief of this, then, must be of benefit. The patient becomes more quiet and comfortable, respiration becomes slower and deeper, pulse rate decreases, and sometimes the temperature drops and he sleeps. We often err by not starting the oxygen early. It should be applied as soon as cyanosis appears.

The *oxygen room* is the most effective way of administration; it is expensive and has been installed in only a few hospitals. *The tent* is almost as effective but it, too, is expensive. One house in Philadelphia which rents tents, charges $20.00 a day. This includes the oxygen used and service for the apparatus. At the Philadelphia General Hospital we have cut the expense of giving oxygen by greatly reducing the soda-lime mixture, the purpose of which is to absorb the CO_2 exhaled. The chemist of the hospital estimates that without this mixture the CO_2 rises but little above that of the atmospheric air. This amount is not harmful and indeed Henderson claims an increase is desirable and arranges to have an increased amount in the tent which he has devised. Expense has also been considerably reduced by substituting commercial oxygen for the chemically pure. The former is comparatively pure and certainly is more so than atmospheric oxygen. In the older type of tents it required 4-5 litres per minute to give the optimum concentration (40 to 60%). In the newer ones 2 litres per minute will suffice. Once begun it is necessary to continue the oxygen day and night until the patient is better. It costs us at the Philadelphia General Hospital $3.00 to $4.00 a day.

Oxygen may also be given effectively by means of the *nasal catheter*. A 12-14 size catheter is inserted through the nostril to the pharynx and withdrawn a half-inch to prevent the stream of oxygen from irritating the mucous membrane. Additional holes are made in the inner end of the catheter, and the external end is connected to the tube from the oxygen tank and fixed to the cheek with adhesive tape. The nasal and pharyngeal cavities should be sprayed with liquid petrolatum every two hours and the catheter changed every twelve hours to minimize irritation. The inhalation is more effective if the patient keeps his mouth closed and breathes only through his nose.

In a recent publication Barker et al. (J. A. M. A., 103: 244, July 28, 1934) claim that a concentration of 40 to 60% in alveolar air may be obtained by the catheter. Thirty-five per cent can be obtained with 6 litres per minute, and 50% with 10-12 litres per minute. The cost of oxygen by catheter is therefore more than by tent, but this is partly compensated for by the original cost of the tent and its upkeep, and the difficulty of operation. But this last may be ignored, for any good nurse can soon be taught to handle it.

Artificial Pneumothorax

This is the most recent agent offered for the treatment of pneumonia. It was originated by Friedman (Detusch. Med. Woch., 47: 433, 1921), who treated six cases successfully with it. It was then only occasionally used until 1932, when J. J. Coghlan (Lancet, 50: 13, 1932) revived it. He had five recoveries in six cases treated. Last winter, 1933-34, it was used in forty cases in the Philadelphia General Hospital, with enough success to encourage its continued use. The mortality in these was 35% (3 died within 8 hours), and in the control group admitted in the same period and with the same variations of duration, extent involved, &c., it was 51%. These are high figures in pneumonia mortality, but at the Philadelphia General Hospital they have always been high, because of the character of cases admitted to this big, free, municipal hospital. Many are greatly debilitated by previous disease, dissipation, malnutrition; many are admitted in advanced stages with the forlorn hope that hospital treatment may save them. The paper by Albert Behrend (J. A. M. A., 102: 1907, 1934), discusses eleven of these cases; and one by Behrend, Tuck and Robertson, not yet published, will analyze the results of the treatment in the whole group of 40, which includes all that were admitted to several services, including mine. Quoting

these two papers, the following points may be laid down:

Results

Relief of Pain. This was most striking, and was due to separating the two layers of inflamed pleura. With relief of pain deeper breathing occurs and the unaffected lung is better ventilated; cyanosis is consequently lessened. In one of my cases the air did not prevent subsequent adhesion of the layers of pleura. At autopsy nearly all of the pleural cavity was found to be obliterated.

Fall of temperature. Often the temperature fell suddenly as in crisis; in others it declined by lysis. It was noted by Coghlan, Behrend, et al., that the temperature was prone to rise again on the second day and that a second injection of air caused it to fall permanently. The average duration of fever after the first injection was three and a half days, while in the controls it was seven days.

Reduction of Toxemia. The patients seemed better and more alert even when the temperature was not reduced; they were apparently less toxic.

Cough and sputum were lessened in some of the cases.

There was no pleural shock, pyoneumothorax, or other complication which could be blamed upon the procedure. Bacteremia was present in more of the controls than in those treated. Only unilateral cases were treated. At this time the procedure does not appear to be applicable to cases with both lungs involved.

Cause of Improvement

The explanation of the apparent benefit of this treatment is not entirely satisfactory. The compression of the lung is probably the basis. Roentgen ray films showed that the lung was compressed. This reduces the blood and lymph flow through it and presumably lessens the amount of toxic materials entering the systemic circulation. The immunologic agents have then a smaller force to combat and are more apt to gain ascendancy.

Technique

The air is injected with the usual two-celled apparatus which is used in producing artificial pneumothorax in pulmonary tuberculosis. The patient reclines on his unaffected side with a pillow under it and his arm raised above his head to widen the intercostal spaces. The tissues, including the parietal pleura, are anesthetized with 1% novocaine. An 18-21 gage needle is used and the puncture is made in the 7th or 8th interspace. When the pleura has been pierced the manometer must show negative pressure with marked oscillations. Then 400-600 c. c. of air is injected, the manometric pressure being measured every 50 c. c. If positive pressure or pain occurs stop the injection to avoid mediastinal displacement. Turn off the air, withdraw the needle, and close the puncture wound with collodion. Repeat the procedure in 18-24 hours, for the air is quickly absorbed. Two insufflations are usually sufficient; a third may be used if the temperature does not fall. Adhesions may limit the amount of air used, or prevent the entrance of any. The air was given on the first to the fourteenth day of the disease, but usually on the third to fifth. The results were better when it was given early.

SUMMARY

Each of these agents is a beneficent factor in the treatment of pneumonia. There is positive evidence of the value of the antiserum: mortality in type one has been materially reduced, and in type two, moderately. The use of oxygen in adequate amounts relieves anoxemia and thereby reduces the burden on the patient's resistance. The value of artificial pneumothorax is still doubtful, but those who have used it have the impression that it is of value and that it has saved some lives. It is probable that combinations of these factors will be advantageous. We may be able to crystallize about them in an effective attack upon the disease. Each of them is most effective when used early, so that we are brought back to the necessity for early diagnosis and the institution of early attack. A vigorous offensive is the best defense.

DISCUSSION

DR. ROBERT W. TOMLINSON (Wilmington): I have enjoyed Dr. Jump's paper very much. Any man who has been matriculated in the Philadelphia school, and who has paid any attention to the eulogy which is paid to the speaker both at the hands of the faculty and the students, knows very well his reputation.

There is one question I would like to ask. Perchance this thing is passe now under Dr. Kolmer's tutoring. Concurrently with the portrayal of the use of vaccines he advocated

pneumoquin. I would like to know if in your opinion it has any therapeutic value as an agent.

I was very much relieved to hear you say that the application of this mechanical principle of correction is only feasible in the unilateral instances, and not in the bilateral pneumonia.

Dr. Henry Jump: I have used pneumoquin occasionally, and I reckon if it is used very carefully you will not get bad results, but the possibilities are pretty strong in favor of optic atrophy injury. You don't give much liquid in order to get a concentration of your pneumoquin in the blood, and the patients just suffer.

I remember a youngster not very long ago pleading for another drink of water, and when we gave him a little he wanted another drink; and so it was. He made a recovery, but he was not very sick to begin with, and I got him at the very beginning. I made the diagnosis over the telephone and saw the boy a few minutes afterward, when we got him started. I happened to have some of this pneumoquin with me, so I used it. That is an ideal condition. Patients just will not respond that way very often.

Your other thought was about the bilateral pneumonia. So far we have not dared to think of it any more than we did originally in bilateral tuberculosis; but we are getting around to believe that maybe some of the cases of bilateral tuberculosis might be treated with pneumothorax. This is certainly the most distinct advance in the treatment of tuberculosis, a direct measure, when we have been treating and getting improvement by the indirect means of hygiene and sanitation.

That is a home-made apparatus, made by the engineer at the hospital, because they wouldn't let us have one of two that they had in the tuberculosis ward. Therefore, we asked the engineer to make this, and it works just as well. I see that another has been offered by Burgess Gordon, which claims to be a more easily applied apparatus for artificial pneumothorax.

Dr. Hopkins asked me today what I thought of hot packs, and I reminded him of the recent thought of the electro-therapeutists that diathermy is of value in the treatment of pneumonia. I have had practically no experience with it, but these gentlemen who apply it are perfectly positive that they have produced remarkable improvement by the generation of heat within, at the point where the lung is most infiltrated. It, again, must be applied early in the disease; but as our subject was these three remedies or measures we cannot go into any of those others.

PYELITIS IN CHILDREN*

Charles E. Wagner, M. D.,
Wilmington, Del.

The condition commonly termed pyelitis, was first described in childhood by Huttenbrenner, in 1876. He emphasized the extreme frequency of the disease and the ease with which it might be overlooked. Fever, poor appetite, and pyuria seemed to be the principal symptoms. Strictly speaking the term pyelitis should be applied only to those cases in which we know the infection is limited to the kidney pelves. Pyuria really should be applied to those cases which we now call pyelitis, for it is usually impossible to localize the infection in any one organ of the urinary system by the clinical symptoms or the physical findings which may be present.

Pyelitis may occur in the newborn. It is most frequently encountered, however, from the third to the eighteenth month of life, a period corresponding closely to the diaper age. In the newborn infant it is found more often in boys. From two weeks of age to two years of age it occurs about nine times more frequently in girls than in boys, and after two years of age the ratio is about four to one.

There is an increased incidence of the disease during the summer months when there are more gastro-intestinal disorders, and also in the winter months when upper respiratory infections are common. A case is often diagnosed grip which later proves to be pyelitis. Infections of the skin may also cause secondary infection of the urinary tract. Stasis due to obstruction caused by stones, valves, strictures, and phimosis, or lack of urinary secretion, as in acute intoxication, cyclic vomiting or vomiting from any cause, predispose to infection.

Gram negative bacilli belonging to the colon group are found in about three-fourths

* Read before the Medical Society of Delaware, Dover, October 9, 1934.

of the cases. Staphylococci, streptococci, and pneumococci are the chief causes in the remainder of the cases. It might be said in passing that a catheterized specimen of normal urine shows no bacteria if the technique is carried out without contamination.

We are handicapped in determining the mode of infection because of the fact that cystoscopic examination and ureteral catheterization are rarely resorted to in the acute stages. The routes by which infection takes place for that reason shall only briefly be mentioned as follows:

1. Hematogenous. The frequency with which pyelitis occurs in various forms of sepsis and upper respiratory infections would indicate that infection of the renal pelvis may take place through the blood stream.

2. Ascending through the urethra, bladder, and ureters. The frequency of pyelitis during the period when children are wearing diapers leads us to believe from clinical observation that infection most frequently takes place by this route, even though some writers contend that the valve-like action of the ureters passing obliquely through the bladder wall prevents the upward course of organisms from the bladder.

3. Lymphatic. We have no proof that infection occurs in this way. Organisms may be carried by the lymphatics from the intestinal tract to the capsule and thence to the pelvis of the kidney. It has also been suggested that organisms gain entrance to the blood stream by way of lymphatics of the external genitalia and then reach the kidney through the blood stream.

Pyelitis is often overlooked during the first week of life and occasionally accounts for unexplained fever at that time. The infection usually persists for only two or three weeks unless there is some obstruction of the urinary passages.

The onset of pyelitis in infants under two years of age is usually acute and associated with fever. It may be associated with convulsions, with rigidity of the neck, with vomiting or with marked diarrhea. When the illness has persisted for a short time the child usually has a peculiar ashen pallor, unexplained restlessness, and an expression of anxiety. In the milder cases there may be slight gastro-intestinal disturbances and very little fever. Severe cases may terminate fatally and are characterized by nausea, vomiting, rigidity of the neck, coma and convulsions.

The temperature, as a rule, is high, but in marantic infants there may be practically no fever. The temperature may remain high and come down suddenly by crisis, as in lobar pneumonia. In the septic type the temperature varies between 97° F. and 106° F. Transient blocking of the ureter may cause sudden rise in temperature associated with temporary absence of pus from the urine.

Symptoms pointing toward urinary infection are found more often in children over two years of age. Pain in the lower part of the abdomen, burning, tenesmus, and most commonly frequency of urination may be present. These symptoms are probably due to involvement of the bladder, as pain just above the symphysis pubis is a common complaint. The usual onset is slow and gradual, as in typhoid fever, but it may be acute with fever suggestive of pneumonia. Whatever the type of onset, the presence of pus and organisms in the urine is necessary to establish the diagnosis.

Chronic pyelitis may occur in two forms. In one the symptoms are indefinite and obscure; in the other there is a series of recurrent attacks of fever. Congenital malformations of the genito-urinary tract are often a cause.

The course of pyelitis in both infant and older child is usually favorable. When death occurs it is generally due to pyelonephritis resulting from repeated attacks. Relapses are common. A case should not be pronounced cured until at least two sterile cultures are obtained at intervals of several days after treatment has been discontinued. Even then reinfections may occur.

Pyelitis can be suspected in a case of high fever associated with pallor and restlessness, but a definite diagnosis should be made only after the demonstration of pus and bacteria in the urine. The disease occurs so frequently that we really ought to examine the urine of every child who has fever. In actual practice this is not always possible, but certainly if the fever persists more than three days a urinalysis should be made. We should not, however, fall into the error of making a diagnosis

of pyelitis every time we find a few pus cells in a specimen of urine.

In obtaining a specimen of urine for examination care should first be taken to cleanse the external genitalia. A vaginal infection or inflamed prepuce may be responsible for the presence of pus in the urine. An uncentrifugalized specimen, obtained with special precautions contains not more than two or three pus-cells to the low powered field in the urine of boys, and not more than six to eight cells in the urine of girls.

When pyelitis is present the specimen is usually cloudy, acid in reaction, and contains a trace or more of albumin. On microscopic examination many pus cells, frequently in clumps, are found. Under high-power magnification large numbers of bacteria are seen.

When in doubt about the diagnosis a catheterized specimen of urine should be obtained. The usual sterile precautions should be taken, and the area around the urethra dried with a sterile applicator or gauze before the catheter is passed. It is well to let a small amount of urine pass before collecting the specimen, as the introduction of the catheter may carry in bacteria from the urethra.

If a case of pyelitis persists after intensive treatment for a month or six weeks, a cystoscopic examination should be made. Cystoscopes have been greatly improved in recent years for use in children. We are also very fortunate in Delaware in having urologists who are competent and skilled in making complete examinations of the genito-urinary system. I wish at this point to make a strong plea for closer co-operation between the urologist and general practitioner or pediatrician in cases of chronic or recurrent pyelitis in children.

Congenital defects of the urinary tract are more common than we would suppose. Consultations of urologists in several cases I have had have resulted in the finding of unusual congenital defects or unreteral stricture following infection. I was formerly too conservative in the matter of calling upon a urologist, but in recent years I have been more than convinced of the wisdom of it in persistent cases.

Washing out of the urinary tract is the most important feature in the treatment of pyelitis. As much fluid as possible should be given. If an infant does not care for pure water, a little dextrose may be added. He should receive at least a quart a day and as much more as possible in addition to food.

Retention enemas of normal salt solution may be given every three or four hours if fluid is not well tolerated by mouth. A Murphy drip is not very successful in children. Teaspoonful amounts of water at frequent intervals are often well retained when larger amounts are vomited. Normal salt solution may also be given intraperitoneally if oral and rectal administration of fluid is inadequate.

The general nutritional condition must be watched. Feeding by gavage should be resorted to in cases of infants who have anorexia. Constipation should be relieved with enemas rather than with laxatives. Sponge-baths may be given to lower the temperature.

In addition to forcing of fluids, treatment with alkalis has brought about the best results in acute cases. Sodium citrate and sodium bicarbonate are given until the urine becomes definitely alkaline. The quantity of bicarbonate needed to accomplish this is approximately 15 grains for each year of the child's age, given every four hours. The quantity of citrate is slightly in excess of this amount. Potassium citrate should not be used.

The drug of greatest value as a urinary antiseptic is methenamine (urotropin). Its action, of course, is dependent upon the setting free of formaldehyde in the urine. The more acid the urine is the more rapid is the formation of formaldehyde. Calcium and ammonium chloride have been used for acidification, but they are nauseating to most children.

Recently I have used a tablet called Uro-Phosphate, made by Wm. P. Poythress and Company, of Richmond, Virginia. It contains 7½ grains of methenamine and 10 grains of sodium acid phosphate. It is not unpleasant to take and the results have been excellent in the few cases in which I have used it. It should be discontinued if hematuria occurs, and should be temporarily discontinued if large doses cause burning on urination.

From work done by Shohl and Janney, it is known that the colon bacillus is inhibited if the acidity or alkalinity of the urine is increased beyond a certain point (pH 4.6 to 5, acid, and at pH 9.2 to 9.6, alkaline). The

optimal growth of colon bacilli takes place at pH 6 to 7; this is the average reaction of the urine of a person who is on a mixed diet.

Drainage by forcing fluids and alkalinization are believed sufficient to cure almost all cases of pyelitis. In cases of subacute or chronic pyelitis most writers are agreed that urinary antiseptics are of undoubted value. Among other remedies that have been used may be mentioned intravenous injections of mercurochrome or arsphenamine preparations, acriflavine by mouth, autogenous vaccines, and non-specific proteins. Foci of infection should, if possible, be removed. Improvement often follows removal of carious teeth and diseased tonsils and adenoids.

Recently ketogenic diets have been used successfully. In the presence of ketosis, the urine becomes free of pus and organisms. The patient is then gradually returned to a normal diet. Without going into detail regarding this method of treatment I shall refer you to an article by Helmholz in Proc. Staff Meet., Mayo Clinic, 7: 260, 1932.

SUMMARY

1. Pyelitis in children is an ascending infection of the genito-urinary tract in most cases.
2. Gram negative bacilli belonging to the colon group are the organisms most frequently found.
3. Forcing fluids and alkalinzation will cure most cases.
4. Subacute or chronic cases respond best to treatment with methenamine and acid sodium phosphate.
5. If a case persists for more than six weeks without much improvement, a complete urologiv examination should be made.

DISCUSSION

DR. BRICE S. VALLETT (Wilmington): I just want to say a word about Dr. Wagner's paper. I feel that up until the last few years there has been a lot of sentiment on the part of parents about having their children cystoscoped, but the instruments are very tiny now and children can often be cystoscoped under local anesthesia, while some of the more refractory types can be given a very small dose of veratrum, which puts them to sleep, and they sleep right through the cystoscopy.

Pyelitis is a rather serious addition, and if not cleared up in infancy or in childhood tends to become drawn-out and follow the child into later life.

Another advantage of cystoscopy is that it will often clear up the diagnosis and show where you are dealing with a congenital defect or some obstructive factor.

There are other methods of diagnosis such as intravenous methods, intravenous urography, but that probably is inferior to cystoscopic measures in making a diagnosis.

The ketogenic diet I think is very important in treatment, and can be used in children the same as in adults. Children can take remarkably large doses of the urinary antiseptics, particularly methenamine, and in some clinics they give methenamine to children to the point of hematuria; in other words, they give it until the child bleeds.

It is probably not well to give the methenamine and ammonium chloride together. The better plan is give your methenamine last.

I think this paper of Dr. Wagner's is very timely, and I think we ought to have a paper by a pediatrician at every state medical convention.

Repeated Lumbar Punctures

William Sharpe, New York (*Journal A. M. A.*, March 23, 1935), states that lumbar puncture is an important diagnostic aid and that repeated lumbar punctures of spinal drainage are of therapeutic value in selected cases of traumatic and allied lesions of the central nervous system. Diagnostic and therapeutic lumbar punctures are without danger when properly performed. The manometric attachment should always be used and only the amount of cerebrospinal fluid necessary to lower the pressure to one-half of the initial pressure should be withdrawn. In the most frequent subarachnoid type of traumatic intracranial and spinal hemorrhage, in adults, children and the new-born, and in the spontaneous subarachnoid "apoplexies" of the elderly, repeated lumbar punctures of spinal drainage not only reduced the mortality but gave a higher percentage of recovery of function. Therapeutic lumbar punctures of spinal drainage, combined with dehydration, have lessened by about 20 per cent the advisability of operative cranial drainage in head injuries in adults and by more than 50 per cent in the new-born.

EDITORIAL

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Immunize Now

May Day—Child Health Day has become an established institution throughout the United States. It was inaugurated in 1924 by the American Child Health Association for the purpose of calling the attention of parents, communities, and the public in general to the need for measures to protect the health of children.

In 1928 the United States Congress passed a joint resolution designating May first as Child Health Day, and authorizing the President to issue a proclamation requesting national observance of the day. In 1929 the Conference of State and Provincial Health Authorities of North America appointed a May Day Committee. In 1932 this committee took over from the American Child Health Association, with the continuing assistance of that association, the responsibility for the annual observance of Child Health Day. In the states the work is under the direction of State Departments of Health.

Child Health Day celebrations are intended only to mark and emphasize either the inauguration or the culmination of year-round work for improvement of the health of children. The project for 1935 is diphtheria immunization. This was chosen because there has been but little reduction since 1930 in the number of deaths from diphtheria throughout the country. While particular emphasis will be laid on immunization this year, it is not intended that the project be limited to 1935. On the contrary one of the chief objectives is to have the work continued year after year by the medical profession.

"Immunize Now—Stamp Out Diphtheria," is the slogan.

The measures proposed are:

To immunize all children between the ages of six months and six years.

To make every immunization a routine practice by all physicians.

The majority of pediatricians do immunize the babies under their care during the first year of life. Physicians in general practice also should follow this procedure.

State Departments of Health and the unofficial organizations interested in children are calling the attention of parents and communities to the need for early diphtheria immunization. Each individual physician should be prepared to take care of the applications for immunization. Co-operative plans for this work have been made by the local medical societies and the Departments of Health in this state. While the medical societies have perfected plans for this phase of preventive medicine, there is no reason why it would not be possible to assume gradually other types until eventually preventive medicine forms an important part of the practice of all physicians. This project offers an opportunity for the physicians to assume their rightful leadership in the preventive medical work of their communities.

WOMAN'S AUXILIARY, A. M. A.—

President—Mrs. Robert W. Tomlinson, Wilmington, Delaware.

President-elect—Mrs. Rogers N. Herbert, Nashville, Tennessee.

If you have read the last copy of the *Bulletin* you will have learned much of the many pleasurable events that are being planned for our diversion at the time of our annual meeting in Atlantic City in June. We have, this year, an unusual opportunity to be of real help to our men by doing our utmost to make the visit of our Canadian friends a pleasant one.

It is my understanding that this will be the largest medical meeting that the world has known. The Medical Associations of the two largest countries in North America will join together, and ours is the joy that will come in extending our hands and opening our hearts to our northern neighbors. It is my hope that each of us to whom is charged responsibility will have completed every preparation well ahead of time so that our days may be as unencumbered with unnecessary duties as possible. The program that the convention committee is planning for our interest and pleasure is one of great attraction. Never will we be far from the sun, sea air and the boardwalk. Our meetings, as well as most of our social events, will be within sight of the great Atlantic Ocean.

To committee chairmen I send my gratitude for your co-operation this year. Without it my task would have failed. And remember that when you write your ten-minute reports for the meeting, that the combined information included in their pages, will inform our members of the great amount of fine work that you have done.

To State Presidents—Words almost fail me when I try to acknowledge what you have accomplished. Remember that your national officers are but the ties that bind. That to you are we indebted for the splendid performance of this year's work. Give the best that you have to your three-minute reports, for from all over the country I hear of renewed interest. And be sure that if you cannot read it yourself, you have a deputy, for otherwise it is not read but placed on file and printed with the annual report.

To each and every member I send my hearty thanks and deep appreciation of what your loyalty to your husbands' profession has done to arouse enthusiasm for the type of work and pleasure that the Auxiliary may promote.

Will you pass these words along to the wife of every physician, that while the Auxiliary may have the opportunity of making plans for this meeting by the seas, only the co-operation of every doctor's wife will carry these plans through to a happy fulfillment. We hope that each and every one of them will join with us in our welcome to the Canadian women, and share with us whatever may be of interest and pleasure to them.

MRS. ROBERT W. TOMLINSON.

The *California Medical Auxiliary Courier* made its first appearance at Christmas time and a most effective one it was, too. It is the official publication of the Women's Auxiliary to the California Medical Association of which Mrs. Philip Schuyler Doane is president. The periodical, which is to be sent out twice a year, is edited by Mrs. Elmer Belt, state chairman of press and publicity, and speaks volumes for her clever and brilliant mind. The purpose of the publication is to answer the question "What does the Auxiliary do?" The first issue tells of the part, a large one, played by the Auxiliary in San Diego in bringing to completion a pool for crippled children. The plant which was completed in September, consists of a pool, examining rooms, rest rooms, corrective gymnasium, and administration offices. Arrangements have been made for temporary use of a small hospital nearby, which is the property of another organization.

Some of the patients treated are pay patients, some are paid for by state funds, while others are cared for by the Crippled Children's Society of San Diego. The Auxiliary has co-operated in raising funds and in donating valuable personal service.

The story of the Auxiliary's part in the November election in California when the Chiropractic and Naturopathic initiatives were defeated, is one of real service to medical standards. Through a program of education and by means of actual, gruelling labor, the

Auxiliary was a great factor in the defeat of the bill.

Mrs. John V. Barrow, president of the Los Angeles County Auxiliary, has an interesting idea for the coming year. She plans to give fifteen minutes of each meeting to a program of education for the members themselves. She has named this "What the Doctor's Wife Should Know." Under this will come such topics as: A comparative study of educational requirements for doctors of medicine, public health doctors and nurses, dentists, osteopaths, and chiropractors; Clinics public and private; food handlers; eugenics; anti-vivisection; Mother Welfare; Security for the Child.

Reading List

The Evils of Social Insurance—Medical Annals of the District of Columbia, February, 1935.

The Shortcomings of Health Insurance—Illinois Medical Journal, February, 1935.

Catechism on Sickness Insurance—Ohio State Medical Journal, February, 1935.

Animal Experimentation — Editorial, Hygeia, March, 1935.

Mrs. Robert E. Fitzgerald,
Chairman of Press and Publicity.

MISCELLANEOUS

International Physiological Congress

It is estimated that between 200 and 300 medical men and scientists from the United States will attend the Fifteenth International Physiological Congress meeting in Leningrad and Moscow August 8 to 18. A short, inexpensive tour, closely packed with interest, has been officially arranged. Reservations for the tour and for attendance at the Congress may be made through The Journal for the groups sailing on the SS. "Laconia" July 19 and on the SS. "Berengaria" on July 25. Both groups will stop over in London and will have the opportunity, also, of attending there the Neurological Congress of July 29, 30 and 31.

A folder describing the expedition will be sent upon request. The present organization of state medicine in Russia is already a matter of world-wide interest to medical men and the tour should be a popular one. Dr. James S. McLester, president-elect of the A. M. A., Prof. A. J. Carlson, head of the Department of Physiology at the University of Chicago, and Dr. George Halperin, of the Journal of the American Medical Association, will accompany these groups to the Congress.

The physicians attending will be registered officially as members of the Physiological Congress and will enjoy all the privileges of such appointment. The Intourist has made sensational concessions in matters of price, and doctors' families may accompany them on the same terms. The scientific features of the tour will include visits to hospitals, research institutions, clinics, children's homes and homes for workers. In addition there will be trips to museums, art galleries, theatres, and many typical new educational and cultural establishments.

From Moscow the delegations will proceed south to Yalta, the heart of the Crimea, visiting several great collective farms en route. A trip by boat along the coast of the Black Sea —the Russian Riviera—will afford the opportunity of viewing some of the most scenic spots in all Europe. The return trip will take the visitors through Warsaw, Berlin and Paris.

Register through The Journal; it will be to our advantage as well as yours.

American Association on Mental Deficiency—

The annual meeting of the American Association on Mental Deficiency will be held at the Palmer House, Chicago, on April 25, 26 and 27. The Thursday and Friday sessions will be devoted to studies on Mongolism; Birth Injury as an Etiological Factor in Mental Deficiency; Mental Disorders in Mental Deficiency; The Problem of Sterilization; Defective Delinquency and its Relation to Penal Institutions; Community Supervision of the Paroled Mental Defective; and Newer Methods in Institutional Training for Community Life. The Saturday session, on April 27, will be devoted to the sociological, psychological, and the special educational aspects of Mental Deficiency. Physicians are cordially invited to attend these sessions. Complete data on the program may be obtained from the Secretary, Dr. Groves B. Smith, Godfrey, Illinois.

Medical Care on the Normandie

The thousands of doctors in the United States who, as in all other parts of the world, have in their care patients for whom they would like to prescribe voyages at sea for restoration of health and strength, but who up to now have hesitated to order such trips not knowing exactly what emergency hospitalization facilities would be found on the liners used, may now dismiss their worries and let their charges depart without fear as to the special care they can get on board if they need it.

The new super-liner Normandie, world's largest ship, due in New York on the first lap of her maiden voyage about June 3rd, will present as one of the startling features that mark the modern day of scientific advancement in shipbuilding and equipment, a general hospital without a dark or gloomy corner in it and with every appliance and invention known to the world of medical and surgical care today, readily at hand.

The medical care division will be in three parts, i. e., a hospital unit for passengers, another for members of the crew, and a medical and surgical clinic which the medical profession of New York, in all of its branches and ramifications, will be invited to inspect while the great ship is in port between the day of her public reception and the day she starts back to Havre to complete her maiden voyage.

Any emergency that might arise in the matter of caring for human ills or ailments is provided for on board ship. The equipment has been specially manufactured and is being installed by one of the oldest and most distinguished firms of its kind in Paris. If a physician in the United States desires to give one of his patients the benefit of a sea voyage, he has but to deliver the patient on board, with or without attendant or nurse, and into the care of the ship's doctor, with full explanations as to the nature of the case and condition of the patient, whereupon the instructions given as to diet and any details concerning medical or other care, will be observed and carried out as carefully as if the physician himself were on board.

In other words, the doctor on land can, when and after the mammoth Normandie, flagship of the French line, goes into commission next June, have his orders carried out to the letter on behalf of any patient he cares to send on any trip to enjoy sea breezes and salt air.

When the Normandie shall reach her home port at Havre on any return trip, a patient may go ashore assured that prescriptions issued by the doctor at home, and refilled on shipboard, may be continued in France through the co-operation of the ship's doctor with apothecary shops in Paris and elsewhere. This marks a new day in the general administering of medical care, it is said, and will result in many thousands of persons, seeking better health and strength, making voyages to Europe this year and thereafter, instead of remaining at home because of uncertainty about not obtaining proper medical care at sea.

The new and mighty Normandie which measures 1,029 feet in length, and has a beam of 119½ feet, will be able to carry 2,000 passengers, plus a crew of more than 1,300 men. As one of its departments, the great ship will present for the consideration of an exacting public, a complete establishment for health conservation and strength building. There will be a fully equipped apothecary shop on board with licensed pharmacists in charge.

The possibility of contagion in the medical units on board, is practically eliminated in the case of the Normandie, which is another reassuring point for physicians on land.

Dr. Joseph Bohec, who has been assigned by the French Line to be the ship's chief physician and surgeon when the new flagship puts to sea, has had a long and notable career as a practitioner in Paris and as a ship's doctor. He enjoys a wide acquaintanceship in the United States as a result of his many crossings with American passengers, and his frequent visits to New York.

The technical equipment of the new ship represents the latest and best in every detail that has thus far been devised. For example, the physiotherapy appliances consist of a short-wave diathermical machine with two 250-watt bulbs for use in all local and regional applications. The outstanding medical value here is the effect of heat in atonic cases, as for example in case of indigestion, peripheral

circulation, neuralgia, rheumatism and glandular trouble. The well-known actinic shower invented by Dr. Dausset of the Hotel-Dieu in Paris, with its movable lamp operating on rails, sufficiently powerful to develop 20 amperes, regarded today as the "last word" in artificial sun-baths, will be available to passengers.

The radiology room on the new super-liner will be equipped with a Massiot machine, radiostat at 34, generator PV 4, which has made the use of radioscopy and radiography readily possible.

There will be a total of 35 beds available to passengers should they be needed, and about an equal number for use by the crew in a separate wing, the compact establishment, replete with its fine equipment, being on both an emergency and routine basis so that any service desired may be had. Annex infirmaries will be operated on the same basis for tourist and third-class passengers. Dr. Bohec is to be, of course, the head of the hospital service, and will have two additional doctors as assistants. Seven nurses will be on duty.

For the convenience of passengers, Dr. Bohec will have a public consultation room on B deck near the main hall with office hours from 10:30 a. m. to 12:30 p. m., 3:00 to 4:30 and 6:30 to 7:30 p. m., or he can be reached by telephone from any stateroom, at any time, in case of emergency.

An interesting feature of the ship's hospitalization section will be a tiny drug store, or chemist's shop, which will be located near the entrance to the clinic, and will be ready to fill any bona fide prescription brought from shore or obtained from the ship's doctor on board.

In planning and constructing the hospital and health-building unit for the great Normandie, her engineers and medical directors saw to it that no suggestion of a gloomy or depressing hospital existed. Bright and cheerful colors in various brilliant and impervious surfacings, and settings as uplifting and unlike average hospitals as might well be imagined, are carefully provided. Gloom will not be tolerated on the world's mightiest liner.

BOOK REVIEWS

Useful Drugs: A List of Drugs Selected to Supply the Demand for a Less Extensive Materia Medica With a Brief Discussion of Their Actions, Uses and Dosage. Edited by Robert A. Hatcher, Ph. M., Sc. D., M. D., and Cary Eggleston, M. D. Prepared under the direction and Supervision of the Council on Pharmacy and Chemistry of the American Medical Association. Ninth edition. Pp. 203. Cloth. Price, 60 cents. Chicago: American Medical Association, 1934.

This book represents a valuable and increasingly effective phase of the efforts of the Council on Pharmacy and Chemistry on behalf of rational therapeutics. Since its first appearance in 1913 it has become a recognized work in its field. It has been adopted as a textbook by teachers of therapeutics in the best medical schools and by various examining and licensing boards. The statements of actions, uses and dosage of the various drugs are revised after discussion by the whole Council. They represent the latest and best results of therapeutics and pharmacologic revision. The present edition is in line with the constant aim of the Council, which has been to present a selective and informative yet comprehensive compendium of the more useful preparations in the medical armamentarium. There have been some additions to the list of drugs; a few have been deleted. Individual descriptions show evidence of careful editing. The book is an authoritative, intelligent, critical and entirely adequate textbook for the use of teachers and examiners, as well as for reference by the busy practitioner. It is an integral and constructive part of the Council's efforts in the promotion of the rational use of drugs.

Female Sex Perversion. By Maurice Chideckel, M. D. Pp. 331. Cloth. Price, $6.00. New York: Eugenics Publishing Company, 1935.

This is the most interesting and informative book on this subject that we have yet seen. The author does not believe that perversion is congenital, and brings weighty evidence to substantiate his belief. His criticisms of other writers seem kindly yet logical. Written for all those who have to do with the upbringing of young girls, mostly laymen, it contains much information that the average physician does not usually know. The warning to parents that they are chiefly responsible for sex perversions in their daughters is one that every conscientious parent should

take to heart. A follower of the Freudian school, Dr. Chideckel cites many cases cured through dream analysis. Such cures represent the silver lining to the generally black cloud of perversion. The few minor errors of grammar should be corrected, as well as the statement (p. 275) that sodium bicarbonate is an alkaloid. Obviously denuge (p. 321) should be dengue. In our opinion the illustrations, which are few, do not add to the value of the book. Dealing with a timely subject in an understanding way, the book merits a wide circulation.

Physical Diagnosis. By Warren P. Elmer, M. D., Associate Professor Clinical Medicine, Washington University, and W. D. Rose, M. D., late Associate Professor of Medicine, University of Arkansas. Seventh Edition. Pp. 919, with 342 illustrations. Cloth. Price, $8.00. St. Louis: C. V. Mosby Company, 1935.

Any medical book which has reached its seventh edition is certainly of merit. This book in its last few editions has incorporated all the sustaining qualities of the earlier work, and in addition has been rearranged and added to by Elmer. The result is a most readable and interesting text book on physical diagnosis. Such a work has been rare indeed in the recent past.

There is a large section on clinical anatomy and physiology which, appropriately illustrated, clearly gives an accurate picture to the student of the various regions and organs to be examined and gives accurately too the general relationship of one part to another. The section on preliminary observation which is such an important part of the art of medicine is attractively arranged. The following nine chapters are devoted entirely to inspection, but are so interspersed with illustrations and short descriptions of various abnormalities to be looked for in each minute part of the body, that the reader's attention is held and the real value of inspection in physical examination is appreciated.

Various diagnostic aids such as thoracentesis, spinal puncture, radiology, and especially electrocardiography are described in some detail. These are not strictly to be included in the term physical diagnosis. However, they are presented here as adjuncts to physical diagnosis and seem rather to emphasize physical diagnosis than to eclipse it. The latter is an all too common tendency of the present day.

This work should find a useful place on the desks of internists, practitioners and medical students alike.

Methods of Treatment. By Logan Clendening, M. D., Clinical Professor of Medicine, University of Kansas. Fifth Edition. Pp. 879, with 102 illustrations. Cloth. Price, $10.00. St. Louis: C. V. Mosby Company, 1935.

The compilation of the book is extremely good. It is exceptionally classified, well written and up to date in every particular.

Space does not permit a report on the individual merits of each chapter, but the book contains a rich store of material for reference and advances the latest in symptomatology, diagnosis and treatment. The reviewer has referred frequently to this book, never failing to find constructive suggestions.

Particular attention must be called to the chapter on drugs, where the pharmacology and therapeutic application renders the work indispensable for reference. Again, the chapter on dietetics, which is free from theories, gives to the principles of nutrition their practical application in clinical medicine. To the practitioner whose disappointment has been keen at his inability to obtain better results in the development of the work in the ductless glands, in which he knows there are tremendous possibilities, Doctor Clendening's chapter on endocrinology is a source of encouragement, a complete analysis of results already obtained, what may be hoped for in the near future through scientific experimentation, and a frank and clear warning to leave alone those theories not completely proven.

For the value of its assistance to the general practitioner, this monograph by Doctor Clendening is heartily recommended.

How to Practice Medicine: By Henry W. Kemp, M. D. Pp. 156. Cloth. Price, $3.00. New York: Paul B. Hoeber, Inc., 1935.

This manual of advice to graduates beginning to practice covers the territory all the way from equipping and opening an office to geriatrics. The advice generally is good, even if a bit dogmatic in spots. Our most serious objection is to the author's contumely (chapter VIII) of the medical society that permits its members to *read* papers before it. The style is entertaining.

Modern Motherhood. By Claude Edwin Heaton, M. D. Pp. 271. Cloth. Price, $2.00. New York: Farrar and Rinehart, Inc., 1935.

The author succeeds very admirably in writing a text book on obstetrics for the laiety. He treats the subject fairly and does it in such a manner that it can be easily understood by the lay mind. Beginning with pregnancy and its complications, a chapter is devoted to prenatal care, including discussions of diets and vitamins. Other chapters are devoted to labor and its complications, operative obstetrics, obstetric anesthesia and of analgesia, care of new borns, and the puerperium. A large portion of the book is devoted to the anatomy and physiology of the female reproductive organs, also embryology and socio-biologic theories of heredity, with explanation of the Mendelian law. He gives advice on how to choose intelligently a physician for maternity care. Home versus hospital care in confinement, and obstetrical statistics are very ably discussed. A brief resume of obstetrical history generally, and American obstetrical history in particular, is also included.

The book contains a vast amount of authentic obstetrical information, so that prospective parents may be well informed in order that they may be able to avail themselves of the advantages of modern obstetrical practice. All prospective parents should be urged to read this book. It makes excellent extra-curricular reading for nurses' training schools.

Human Anatomy: Double Dissection Method. By Dudley J. Norton, M. D., Associate Professor of Anatomy, Columbia University. Two vols., pp. 560: illustrated. Cloth. Price $6.00. New York: Columbia University Press, 1934.

Dr. Morton's two volumes represent his new system of teaching anatomy so that the student may get a comprehensive idea of the subject in one year of about 360 hours. Two dissections are done, the first covering only the larger structures and giving a bird's eye view of the whole body. The second dissection covers the finer morphology, and requires no additional cadavers. We are impressed with the system, and have no doubt it will find wide acceptance. An otherwise grinding subject is more popular with the students, who, following this method have done exceptionally well before the state boards.

Good Food at Low Cost. By R. T. Devereaux, M. D., Pediatrician, Chester County Hospital. Pp. 38. Paper. Price, 25 cents. West Chester: Chester County Medical Society, 1934.

This little brochure is an excellent presentation, for the layman, of the omnipresent problem of making the food dollar go the furthest. We congratulate our neighboring Society on its successful venture.

Observations of a General Practitioner: By William N. Macartney, M. D. Pp. 478. Cloth. Boston: Richard G. Badger, 1932.

One's opinions are always open to criticism, for the reason that they do not coincide with others.

Therefore, those whose opinions coincide with the author's, will find this book enjoyable reading.

The Romance of Exploration. Pp. 160. Cloth. New York: Burroughs Welcome & Company, 1934.

This booklet is a brief resume of the modern explorers, chiefly from Stanley to Byrd, and stresses the value of proper medical equipment on such enterprises. It affords a very pleasant evening's reading.

Effect of Atherosclerotic Plaques on Diameter of Lumen of Coronary Arteries

James D. Stewart, Eugene Birchwood and H. Gideon Wells, Chicago (*Journal A. M. A.*, March 2, 1935), examined a small series of hearts to determine the relation between the size of the lumen of the coronary arteries at the site of atherosclerotic plaques, as seen in the collapsed artery in the usual postmortem examination, and the true size of the lumen when the artery is distended by the usual blood pressure. The results indicate that coronary arteries exhibiting many atherosclerotic plaques which, as seen at postmortem examination seem to cause marked local constrictions, may, when distended by the usual blood pressure, possess a fairly uniform lumen without evidence of constriction. Apparently the atherosclerotic plaques in coronary arteries do not necessarily protrude into the lumen during life, and the apparent narrowings seen in the dead body may not have existed during life.

1789—MEDICAL SOCIETY OF DELAWARE—1935

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